UCS 1617 – MINI PROJECT
STUDENTS INFORMATION SYSTEM
INTERACTION DIAGRAM
(Sequence and Communication diagrams)

TEAM MEMBERS :

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INTERACTION DIAGRAM
Sequence and Communication Diagrams

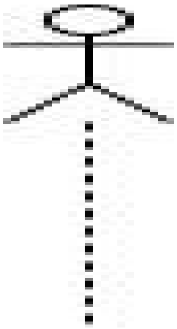
AIM:

To develop interactions diagram namely sequence and communication diagram for Student Information System.

UML NOTATIONS (SEQUENCE DIAGRAM):

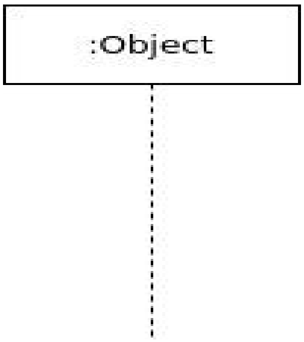
1. Actor

An actor in a UML diagram represents a type of role where it interacts with the system and its objects. It is important to note here that an actor is always outside the scope of the system we aim to model using the UML diagram.



2. Lifelines

A lifeline is a named element which depicts an individual participant in a sequence diagram. So basically each instance in a sequence diagram is represented by a lifeline. Lifeline elements are located at the top in a sequence diagram.

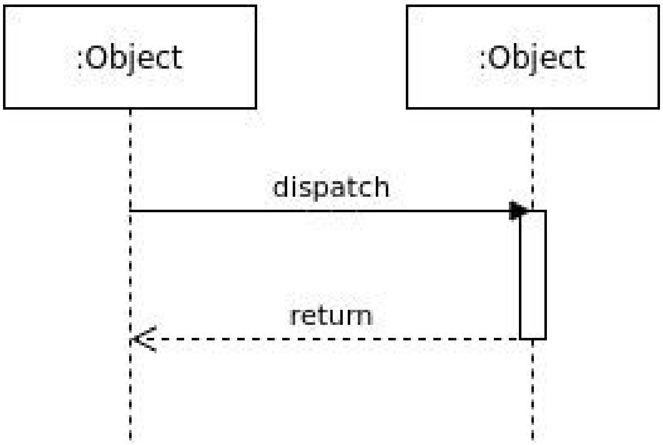


3. Messages

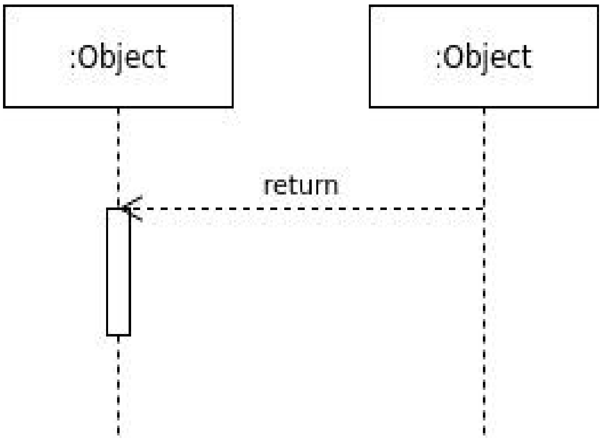
Communication between objects is depicted using messages. The messages appear in a sequential order on the lifeline. We represent messages using arrows. Lifelines and messages from the core of a sequence diagram.

Categories:

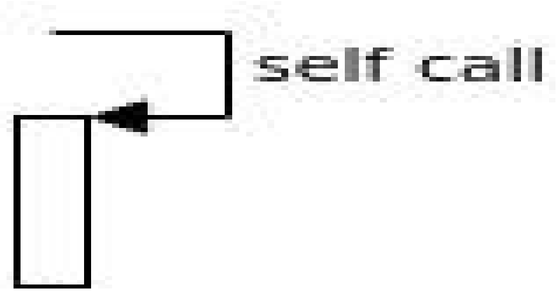
- Synchronous messages:
  A synchronous message waits for a reply before the interaction can move forward. The sender waits until the receiver has completed the processing of the message. The caller continues only when it knows that the receiver has processed the previous message i.e. it receives a reply message.



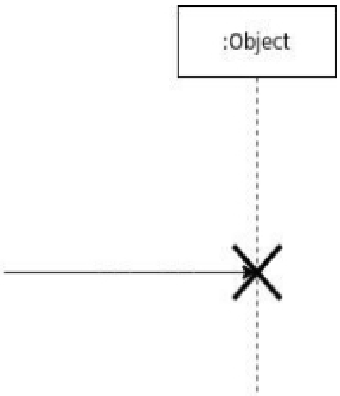
- Asynchronous messages:
  An asynchronous message does not wait for a reply from the receiver. The interaction moves forward irrespective of the receiver processing the previous message or not. We use a lined arrow head to represent an asynchronous message.



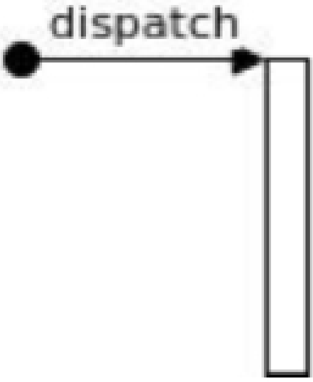
- Self message:
  Certain scenarios might arise where the object needs to sed a message to itself.Such messages are called Self Messages and are represented with a U shaped arrows.



- Delete message:
  We use a Delete Message to delete an object. When an object is deallocated memory or is destroyed within the system we use the Delete Message symbol. It destroys the occurrence of the object in the system.It is represented by an arrow terminating with a x.

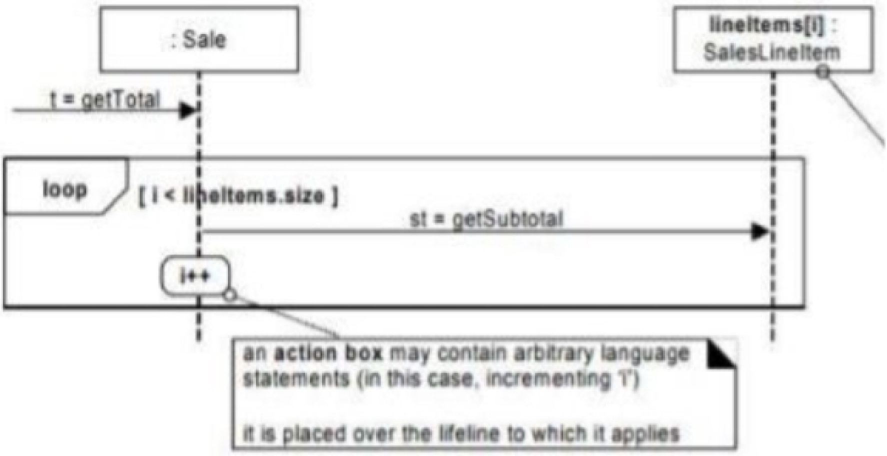


- Found Message:
  A Found message is used to represent a scenario where an unknown source sends the message. It is represented using an arrow directed towards a lifeline from an endpoint.



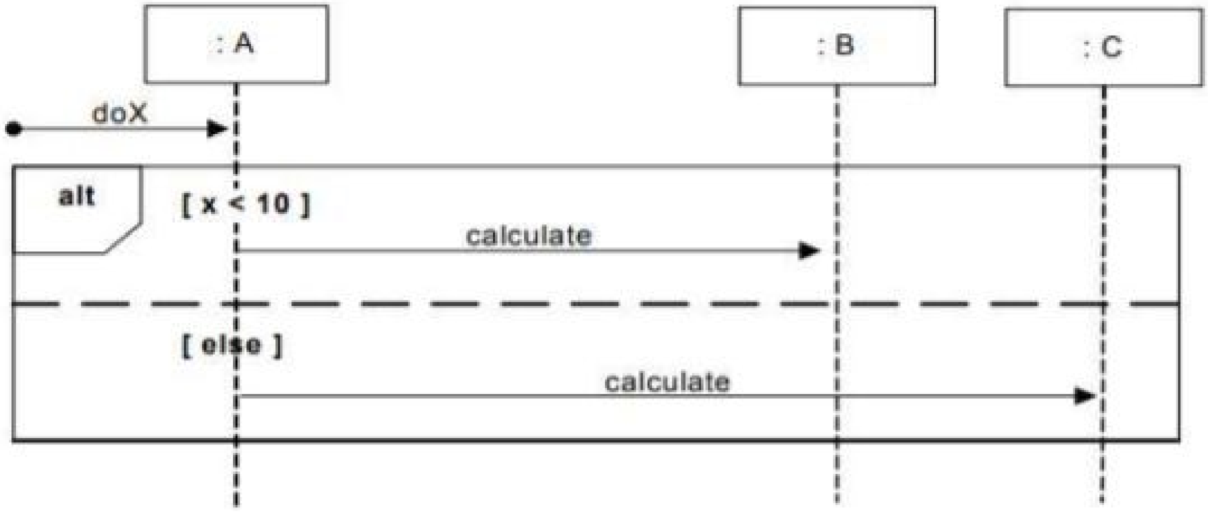
4. Iteration Over a Collection

A common algorithm is to iterate over all members of a collection (such as a list or map), sending the same message to each.


: Sale
lineItems[i] : SalesLineItem
t = getTotal
loop
[i < lineItems.size]
st = getSubtotal
i++
an action box may contain arbitrary language statements (in this case, incrementing 'i')
it is placed over the lifeline to which it applies

5. Mutually Exclusive Conditional Messages

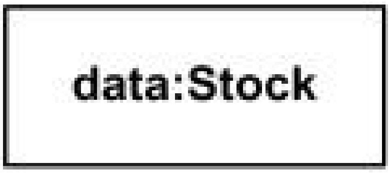
An ALT frame is placed around the mutually exclusive alternatives.



UML NOTATIONS (COMMUNICATION DIAGRAM):

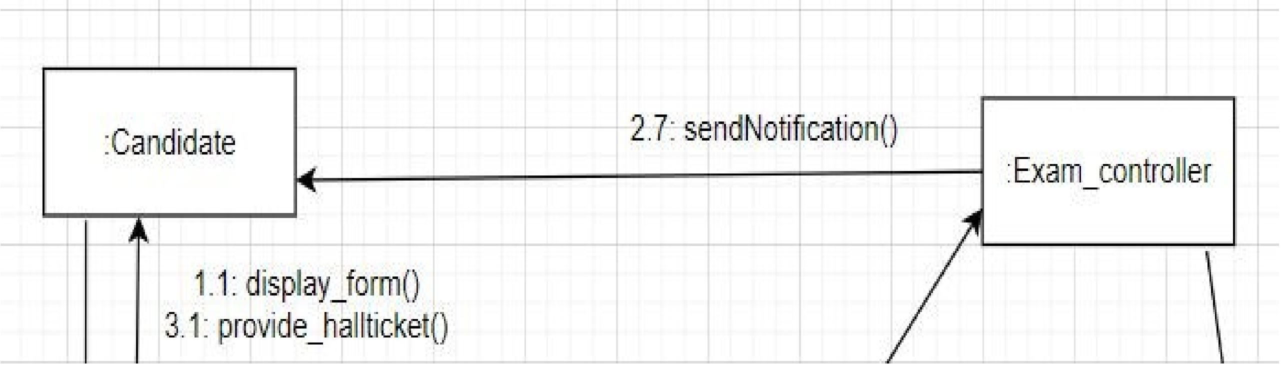
1. Lifeline

A lifeline ,is shown as a rectangle (corresponding to “head” in sequence diagrams). Lifeline in sequence diagrams does have a "tail" representing the line of life whereas "lifeline" in a communication, diagram ,has no line, just "head".



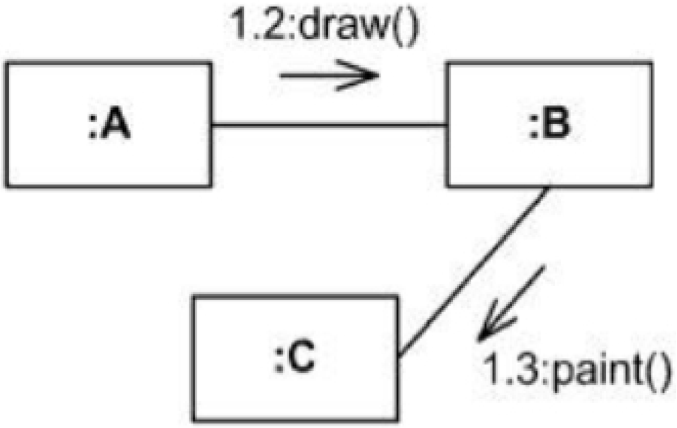
2. Links

A link is connection path between two or more objects,it indicates some form of navigation and visibility between the objects.



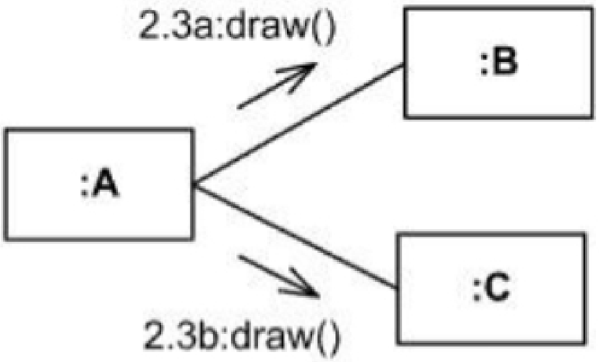
3. Sequential Messages

The sequence expression is a dot separated list of sequence terms followed by a colon (":"). Message name follows the sequence expression.The integer represents the sequential order of the message within the next higher level of procedural calling (activation).



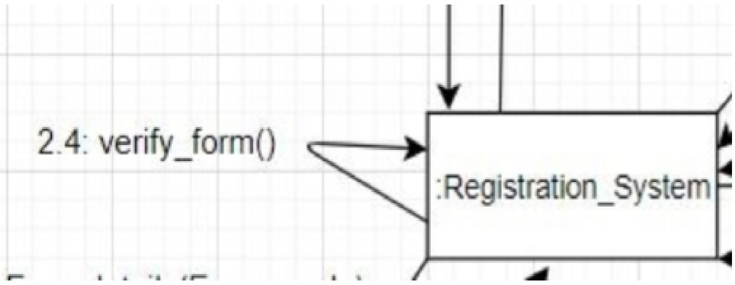
4. Concurrent messages

The name in sequence expression represents a concurrent thread of control. Messages that differ in the final name are concurrent at that level of nesting.



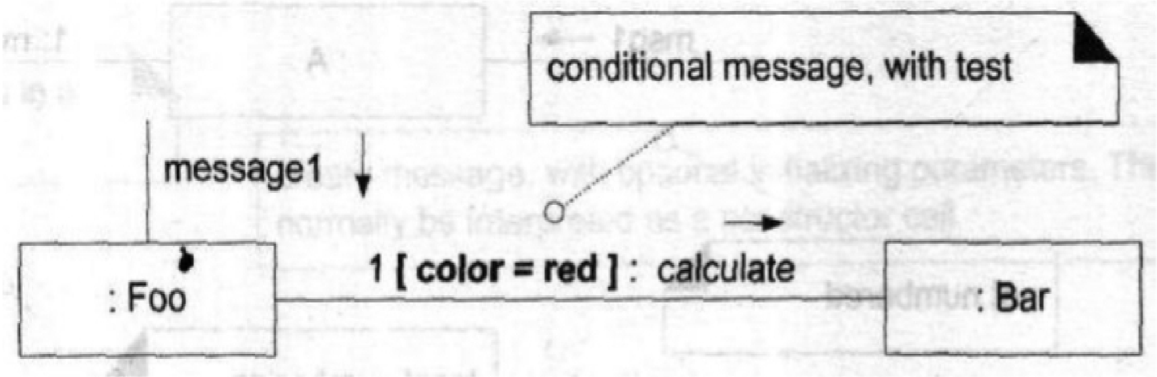
5. Messages to “self” or “this”

Message can be sent from an object to itself. This is illustrated by a link to itself,with A messages along the link.



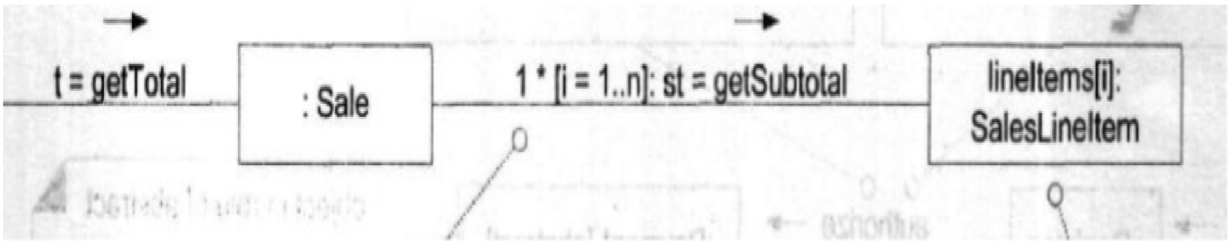
6. Conditional Message

A Conditional message is specified along with the sequence number in square brackets.

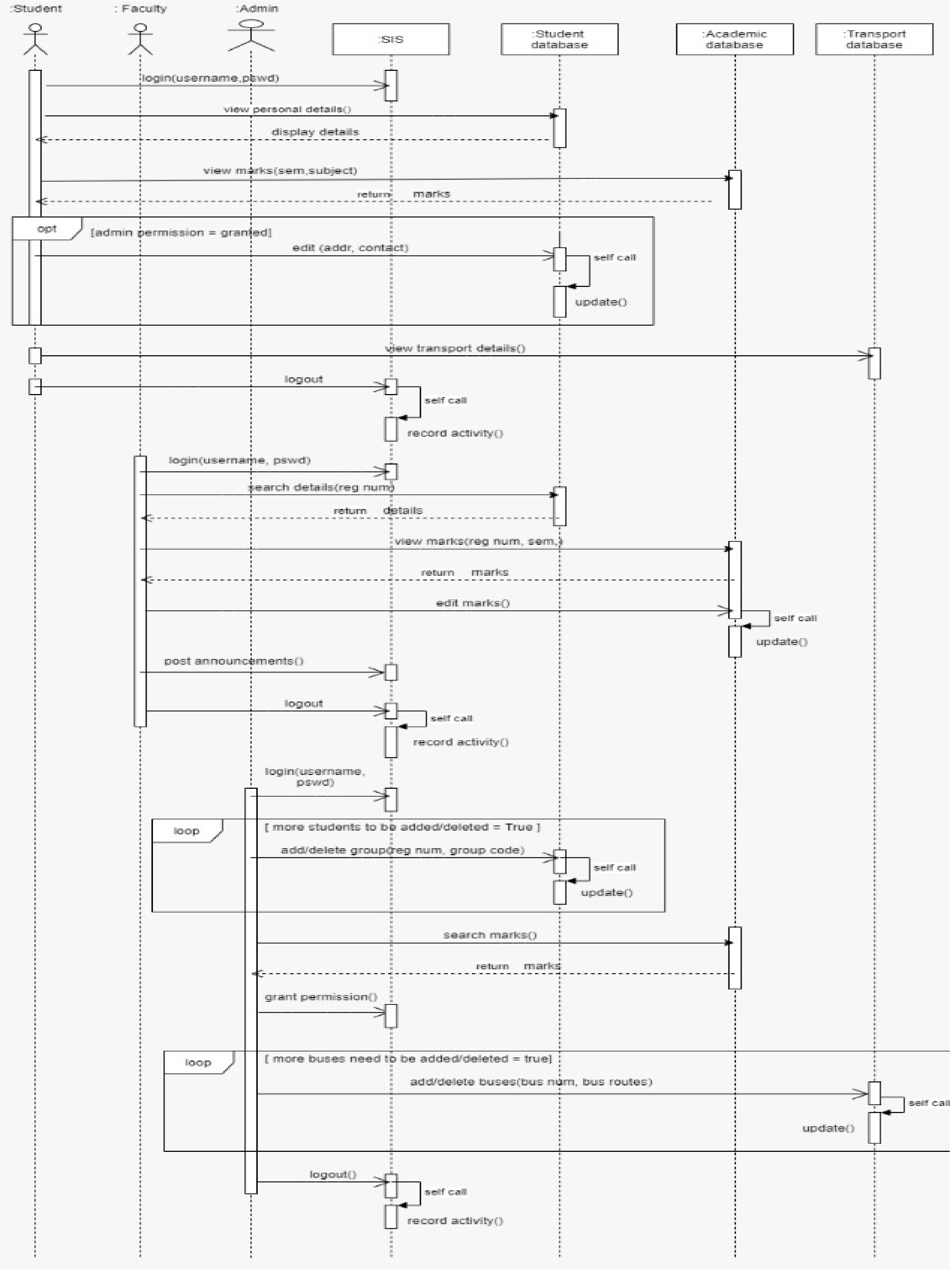


7. Iteration over the collection

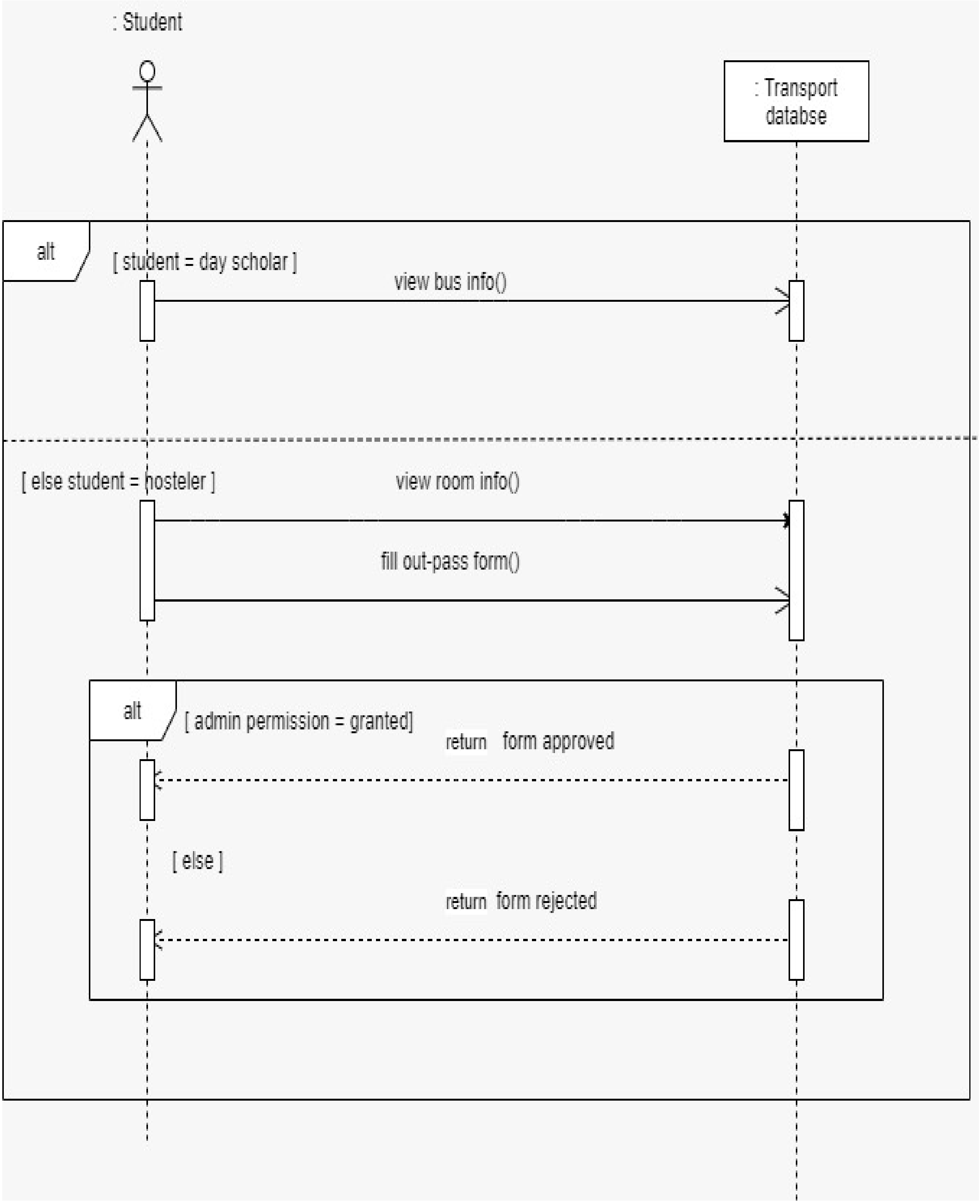
Common algorithm is to iterate over all members of a collection (such as a list or map), A sending the same message to each.



SEQUENCE DIAGRAM:



SUBFUNCTION - TRANSPORT:


: Student
: Transport databse
alt
[student = day scholar]
view bus info()
[else student = hosteler]
view room info()
fill out-pass form()
alt
[admin permission = granted]
return form approved
[else]
return form rejected